

Building an Embedded Tools Standard Using Eclipse



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#eclipsetml

About this Talk

- Target Audience
 - Embedded Linux team leaders/managers looking to drive standards within the development organization
 - Developers creating/supporting a tools standard
 - Developers with custom/internal tools in their workflow
 - Developers desiring tools for third-parties
- Scope
 - High-level overview
 - No code
 - Bad jokes throughout, bad juggling at the end
- Disclaimer – IANAL
 - Especially when it comes to licensing/redistribution

Agenda

- Convergence
- The Eclipse Way
- Eclipse in Mobile/Embedded
- Eclipse for Linux
- Building your Standard
- Tools for Third-Party Developers
- Working with Eclipse project teams

- Q&A

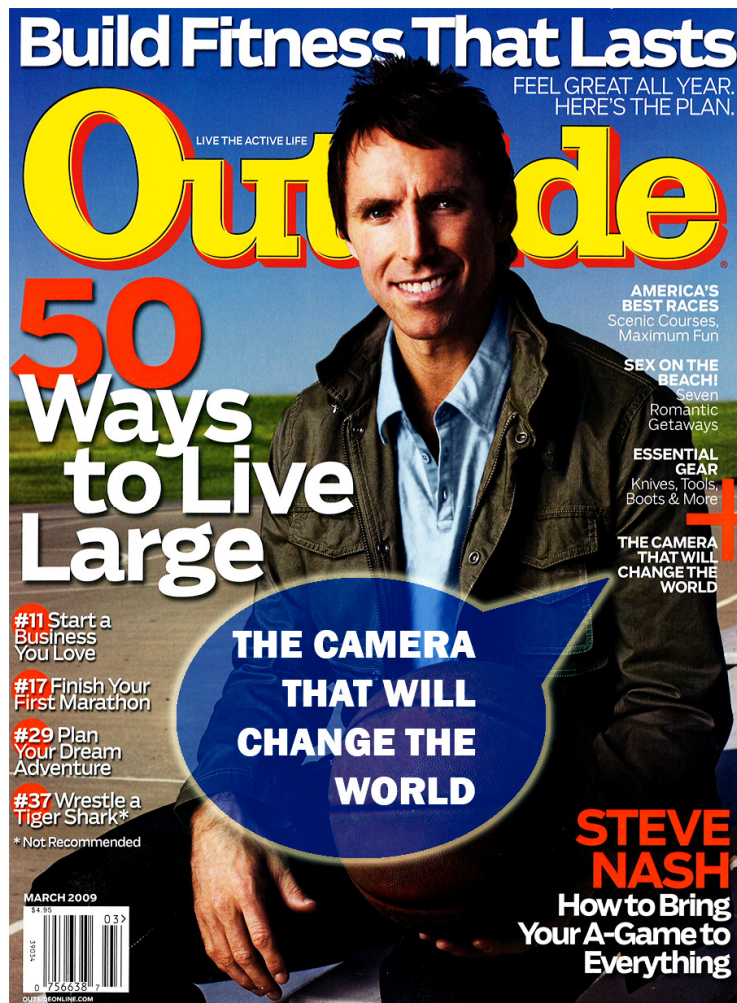
con · ver · gence

kuh n-vur-juh ns - noun

1. the occurrence of two or more things coming together
2. the approach of an infinite series to a finite limit
3. a representation of common ground between theories or phenomena
4. the act of converging (coming closer)

“CALL 2009 THE YEAR of convergence”

- Outside Magazine, April 2009

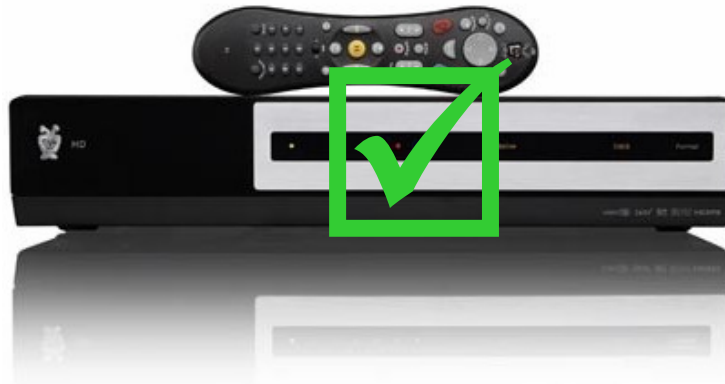


<http://tinyurl.com/amb4zr>



Linux?





Linux!



Problems in Device Development

- Availability of pre-production hardware
- Debugging over the wire
- Reliable diagnostics
- Automated testing
- Geographically distributed teams
- Variety of development tools and styles
- Third-party developers

Eclipse can Help (maybe)

- <http://www.eclipse.org>
- Large, diverse, and active development community
- Wide-spread commercial adoption by OS vendors, OEMs, add-on providers, etc.
- More than an IDE—RCP brings Eclipse APIs to application developers
- Available for your favorite desktop OS

The Eclipse Way

- Available for free download (gratis)
- Business-friendly licensing terms (libre)
 - Branding
 - Redistribution
 - Dual licensing strategies
- Open participation encouraged
- Business open for all to observe
- Merit-based decision-making

Working with Eclipse Projects

- Be comfortable working in the open
- Understand how the EPL is different from other licenses
- Bugzilla and mailing lists are principal means of collaboration and communication
- Submit bugs and patches as a means of gaining trust and respect
- No surprises
 - API stability expected from mature projects
 - Community processes reduce integration headaches
- Docs and testing are always welcome

Eclipse in Mobile/Embedded

- Represented by DSDP, a top-level project of Eclipse.org
- Sub-projects focused on the needs of device software, led by prominent companies in mobile and embedded with contributions by many companies
 - Motorola
 - Wind River
 - Texas Instruments
 - IBM
 - Fujitsu
 - ATI
 - Freescale
 - Intel
 - Nokia
 - Montavista
 - Research in Motion
 - ARM
 - Ericsson
 - Symbian
 - Mentor
 - Cisco

Eclipse/DSDP

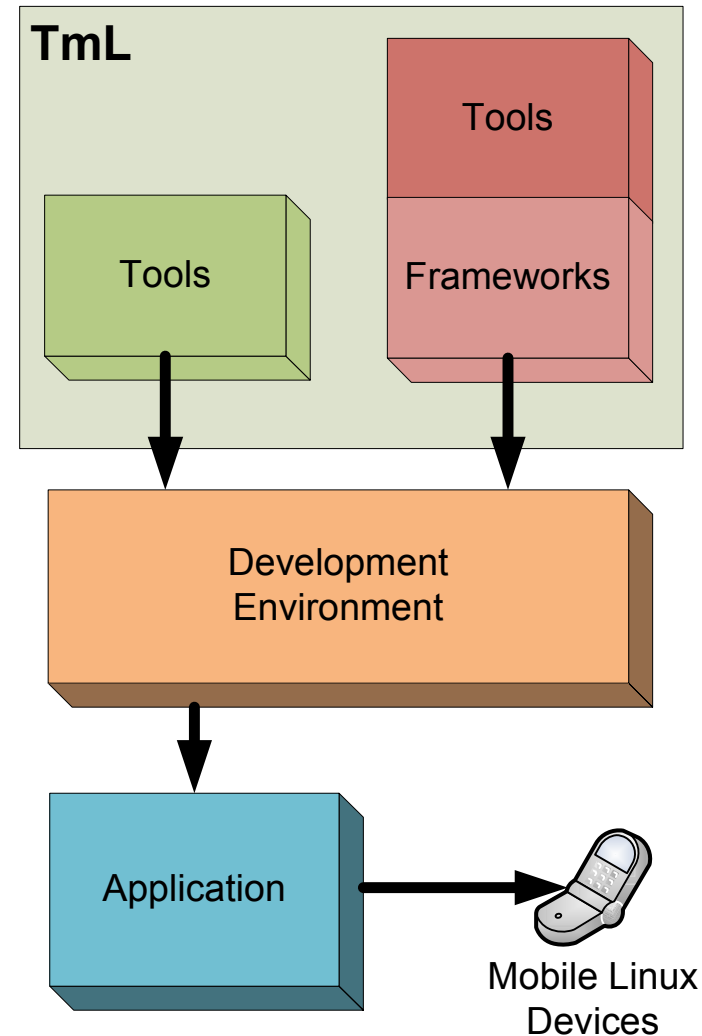
- **TM** - creates data models and frameworks to configure and manage remote (mainframe down to embedded) systems, their connections, and their services (Wind River)
- **MTJ** - extend existing frameworks to support mobile device Java application development (Motorola)
- **TmL** - provide tools and frameworks to support development of mobile applications on Linux (Motorola)
- **RTSC** - provides tools and low-level runtimes to enable component-based development targeting *all* embedded platforms (TI)
- **NAB** - a framework for building GUI applications (Fujitsu)
- **Blinki** - mobile widget tools and runtimes – under review (Genuitec)
- **DD** - improve the overall experience of device software debugging by influencing other projects and filling in missing functionality (Wind River)
- **eRCP** - extend the Eclipse RCP to embedded devices (IBM)

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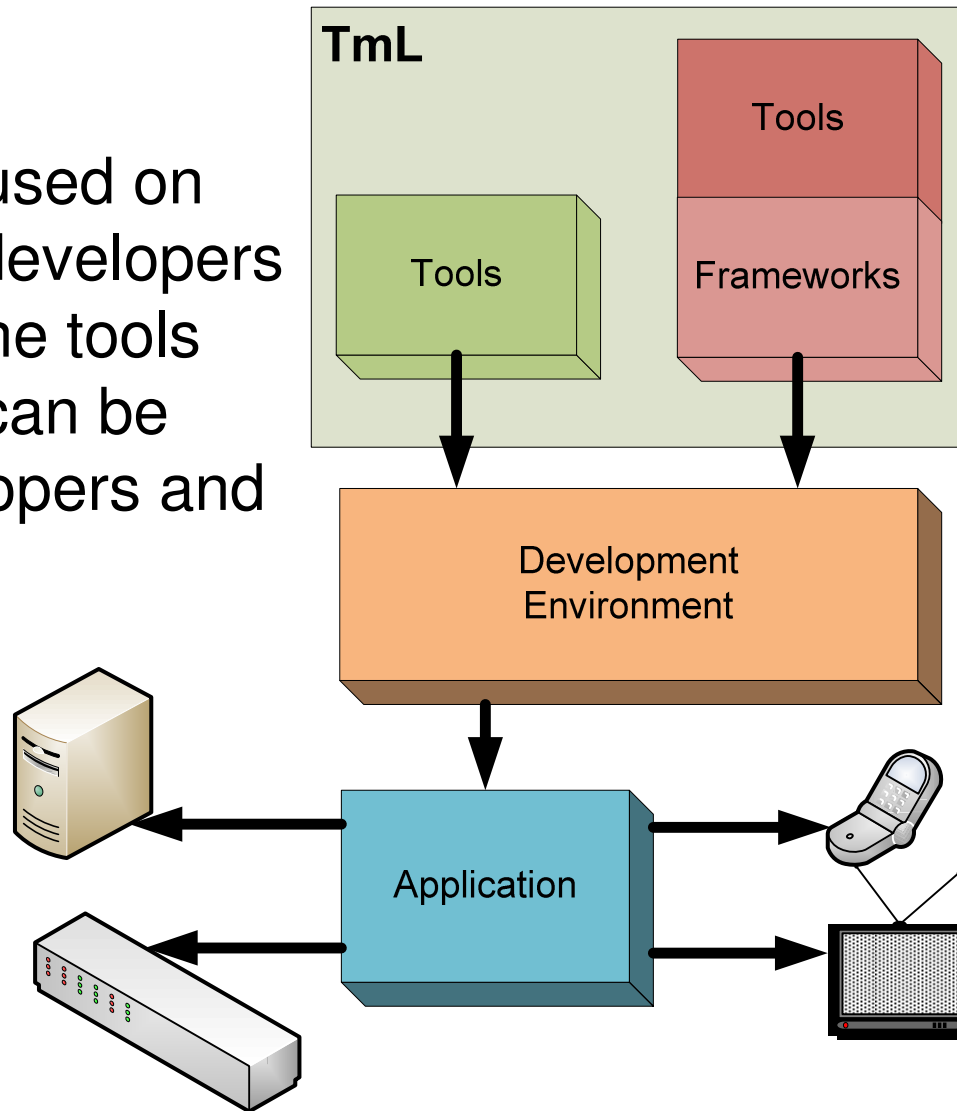
TmL - The Big Idea™

The objective of the Tools for Mobile Linux project is to help create a development environment that allow developers to easily create applications for mobile Linux devices.



More Than Mobile

While TmL is focused on enabling mobile developers targeting Linux, the tools and frameworks can be used by all developers and end users

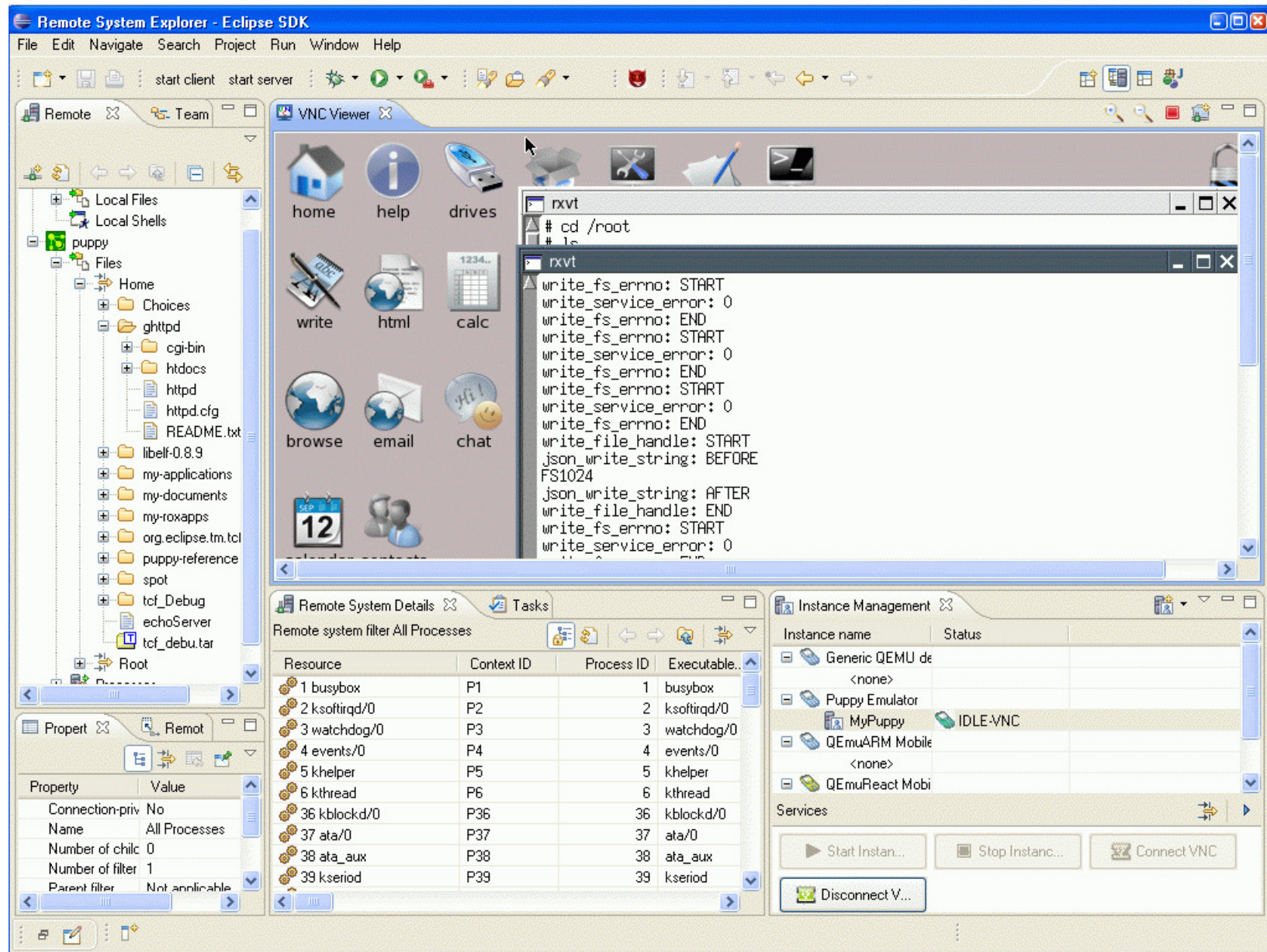


DSDP/TmL

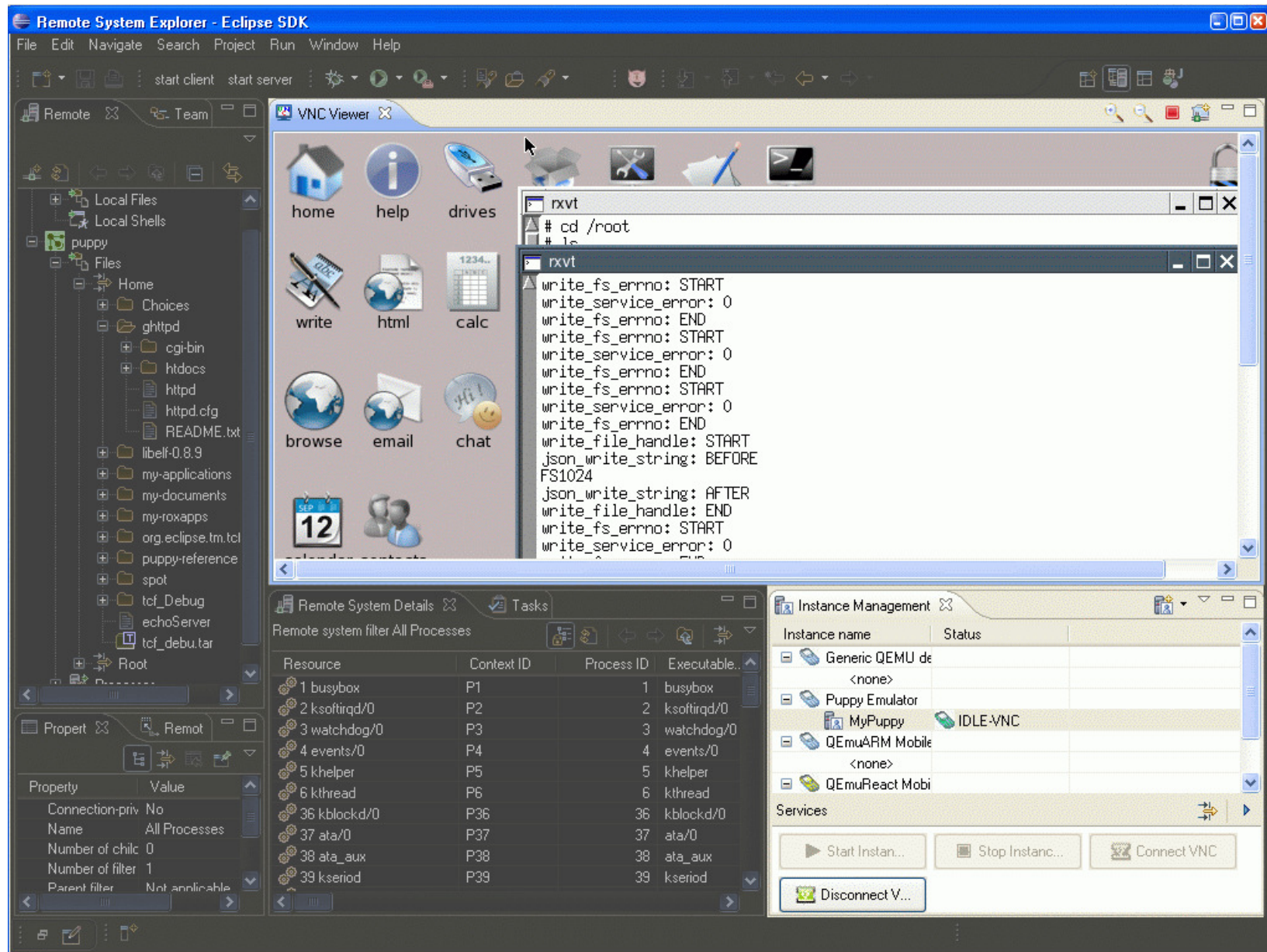
- Incubated in December 2006 by Motorola, with contributions from Montavista and Nokia
- Two releases to date (Oct 2008, Jan 2009)
- Release 0.3 on Eclipse train (June 25)
- Commercial-quality code being used in products available today
- End-user components
 - VNC Viewer
 - /proc filesystem viewers for memory and CPU
- Frameworks for handling the needs of emulators

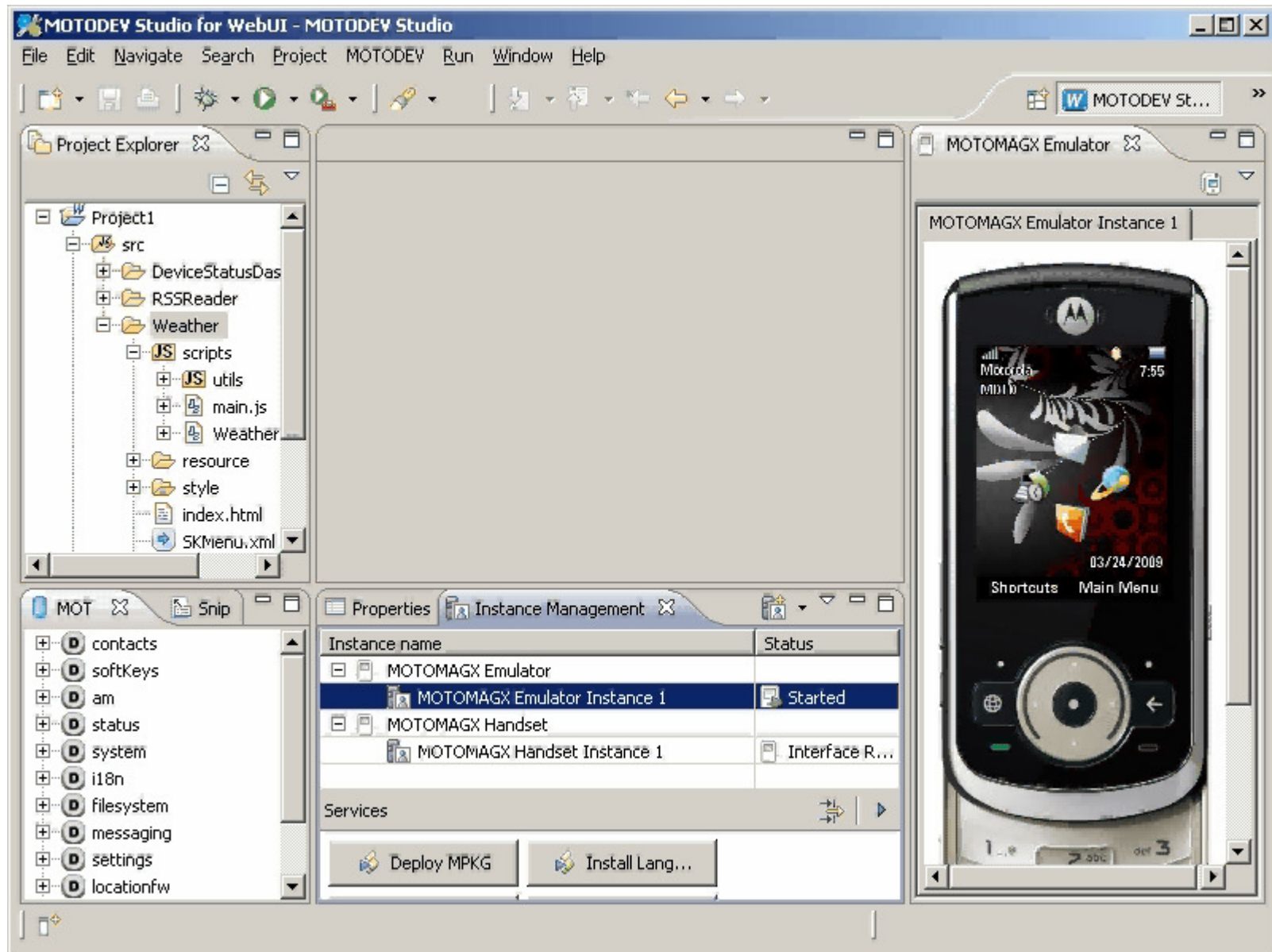
Commercial Adoption of TmL

- Current
 - MOTODEV Studio for Linux (2008)
 - MOTODEV Studio for WebUI (2008, 2009)
 - Future MOTODEV Studio products
- Future
 - Montavista
 - Nokia
 - You?



VNC Viewer plugin in Eclipse Galileo showing Puppy Linux
Courtesy of Michael Scharf @ Wind River





Working with the TmL Team

Project web site:

<http://www.eclipse.org/dsdp/tml>

Project wiki:

<http://wiki.eclipse.org/DSDP/TML>

Regular phone meetings:

<http://wiki.eclipse.org/DSDP/TML/TmLOpenPhoneMeetings>

Developer mailing list:

<https://dev.eclipse.org/mailman/listinfo/dsdp-tml-dev>
dsdp-tml-dev@eclipse.org

TmL demo:

[http://wiki.eclipse.org/DSDP/TML/How to configure TmL demo](http://wiki.eclipse.org/DSDP/TML/How_to_configure_TmL_demo)

Contributions, Bug Reports, Suggestions using Bugzilla

[https://bugs.eclipse.org/bugs/buglist.cgi?query_format=advanced&classification=DSDP&](https://bugs.eclipse.org/bugs/buglist.cgi?query_format=advanced&classification=DSDP&product=TmL)
[product=TmL](#)

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Eclipse TPTP

- <http://www.eclipse.org/tptp/>
- Testing tools
- Tracing and Profiling tools
- Monitoring tools
- Logging and log viewing

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Task Management

- Mylyn
 - Free as in beer
 - Task-centric interface
 - Integrates with multiple back-ends, such as Bugzilla, Trac, JIRA, etc.
- Tasktop
 - Commercial version of Mylyn
 - Individual and trial licenses available for minimal cost
 - <http://www.tasktop.com/>
- Jazz
 - <http://jazz.net/>
 - Commercial suite of products from IBM Rational
 - Collaborative tools for software development workflows

Version Control

- CVS
 - In most distributions
- Subversion
 - Subversive
 - Subclipse
- Clearcase
 - Commercial and OS plugins
- Perforce

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Creating a Tools Standard

- Start with a package, add what you need
- Non-EPL components (eg. toolchains) are not stored on Eclipse.org, but you can redistribute them together, both internally and externally
- Standardize on Eclipse for build system and project management, allow teams the choice to use IDE for development and other tasks
- Eclipse integration/development is a specialized skill—hire or train a local expert

Pre-defined packages

- Eclipse Packaging Project (EPP)
 - Focused versions of IDE + Tools
 - <http://www.eclipse.org/epp/>
- Eclipse Pulsar (Mobile Industry Workgroup)
 - Focusing on common tools for different OEM SDKs
 - Motorola, RIM, Nokia, Sony-Ericsson, ...
 - <http://wiki.eclipse.org/EMIWG>
- DSDP Packaging project (D-Pack)
 - Provide a launching point for embedded development with easy access to non-EPL toolchains
 - <http://wiki.eclipse.org/DSDP/Packaging>

Linux Tools Project

- <http://www.eclipse.org/linuxtools/>
- Ongoing effort, driven by Red Hat, Ericsson, others
- Goal is to create a distribution of technologies that are useful for Linux developers without configuration issues
- Easy access to non-EPL tools
- Sane defaults for integrated tools
- Tools for Linux packagers
- Integrated API documentation
- Diagnostic and performance profiling tools
 - valgrind, oprofile, etc.

Of Interest

- CDT – C/C++ Development Tools
 - Provides support for C/C++ development
- DSDP/DD – Device Debugging
 - Moving to CDT in Eclipse 3.5
- DSDP/TM – Target Management
 - Remote System Explorer
- TCF – Target Communications Framework
 - Emerging host communications standard with native agent

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Tools for Third-Party Developers

- “It’s the apps, stupid”
- Demand for Eclipse is probably already there
- Plugins, plug-ins, plug ins, or products?
- Eclipse as the basis of a branded product
- Add in SDKs, delivered with tools installer or found with Eclipse ‘p2’ updater
- Verify that licenses are compatible for redistribution
- Cover 2-3 years of distributions
- Play nice with others (re: Eclipse common properties)

Forward Looking Statements

- Eclipse 3.5 (Galileo) synchronous release
 - Participation is voluntary, but beneficial
 - Tentatively planned June 24, 2009
 - 2 service releases (~Oct, Feb)
- Eclipse 'e4' in 2010
 - Taking Eclipse beyond the IDE
 - Refactor the platform for richer applications
- Linux Tools Project
 - SystemTap GUI, LTTng, GCC static analysis, CPPunit, gcov
- TmL
 - Continue current development, minus /proc viewers
 - Android support

Getting More Information

- Eclipse Foundation
 - <http://www.eclipse.org>
- Eclipse Training
 - <http://www.eclipse.org/community/training/2009spring.php>
- Eclipse Plugin Central (EPIC)
 - <http://www.eclipseplugincentral.com/>
- DSDP
 - <http://www.eclipse.org/dsdp/>
- TmL
 - <http://www.eclipse.org/dsdp/tml/>

Eclipse Events

- <http://www.eclipse.org/community/events/>
- EclipseCon
 - Annually in March (Santa Clara)
 - <http://www.eclipsecon.org>
- Eclipse Embedded Day
 - June 25, 2009 (Stuttgart)
 - <http://wiki.eclipse.org/EclipseEmbeddedDayStgt>
- Eclipse Summit India
 - July 17-18, 2009 (Bangalore)
 - <http://www.eclipsesummit.com/>
- Eclipse Summit Europe
 - Oct 27-29, 2009 (Stuttgart)
 - <http://www.eclipsecon.org/summiteurope2009>
- Eclipse World
 - Annually in October (Reston, VA)
 - http://www.bluage.com/index.php?cID=eclipse_world

Q&A